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CASTLEACRE PRIORY, NORFOLK.

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The considerable village of Castleacre, situated about four miles north of Swaffham, on the banks of the river Nar, is supposed to have derived its name from the castle built here by one of the followers of the Conqueror, William de Warren, Earl of Surrey, who founded also the magnificent priory which forms the chief subject of this paper. A brief preliminary notice of the castle can, however, hardly be considered out of place. This fortress occupied an area of above eighteen acres in extent, and the remains which still exist indicate very clearly its original strength and grandeur. It was erected on the slope of a gentle eminence, and was surrounded by an embattled wall seven feet thick, with a broad and deep moat on the outside. Three immense buttresses built over the moat supported and strengthened the wall. The interior consisted of an outer and an inner ward; the keep, a lofty circular building of great size and thickness, was in the latter. The principal street of the village now runs directly through the site of the castle, and beneath one of its main gateways, which consists of two gates, one within the other, with a portcullis between, and of two circular bastions to defend the passage. This gateway is at the north end of the street: there are traces of another very similar one at the south. About the centre of the street we find a third gateway communicating with the outer ward, and near the north gate the remains of the chapel of the castle, now converted into a private residence.

The priory was founded by the Earl of Surrey as a cell to that of Lewes, in or before 1085, and was intended for monks of the Cluniac order. Tanner speaks of it as dedicated to the blessed Virgin simply; but Blomfield, in his 'History of Norfolk,' states the dedication to have been to God, St. Mary, and the Apostles Peter and Paul. The founder settled upon it the church of Acre and various other churches, with their advowsons. This grant was confirmed by Herbert, Bishop of Norwich, who certified that the monks of Acre had entered upon that church with his consent, and that the monastery there built was erected by his "provision." William, the second Earl of Surrey, gave numerous lands in Acre and other places, among which were "two orchards and all the plough land from those orchards to the castle of Acre upon which the monks had founded their new church, because that which they previously had was too small and inconvenient." The tithes of a considerable number of churches were settled upon the priory by Ebrard, Bishop of Norwich, about 1140; charters of freedom from toll were granted by the kings Henry I. and Henry II.; and other benefactions, too numerous to mention, were conferred by different individuals and at different periods of time. About 1283 the prior was found to hold, according to the statement of Blomfield, 460 acres of arable land, twenty of pasture, ten of meadow, five water-mills, with the liberty of fishing therein, in pure alms; and divers other lands in the town, held by thirty-six tenants, a court-baron, two folds, two free boars, and two bulls; forming altogether a tolerably ample endowment for a religious house founded

as a *cell*. Indeed, cell though it was, it was considered of sufficient importance to have other houses subordinate to itself as cells. These were—Mundham in Suffolk, Broxholm, South Reinham, and Slevesholm in Norfolk. An hospital of lepers at Rachnesse in Southacre, and the priory of Crabhouse, or Wigenhall, for Austin nuns, in Norfolk, were also subordinate to Castleacre. Owing doubtless to its thus becoming a distinguished establishment, it was raised to the rank of an independent house in the forty-seventh year of the reign of Edward III.

There do not appear to be any circumstances of particular interest in the history of Castleacre Priory. It was surrendered to Henry VIII. at the dissolution of monasteries, on the 22nd of November, 1533, Thomas Malling, the prior, and several of his monks, signing the deed of surrender, which was made, it states, on account of "certain causes them their souls and consciences especially moving." The clear revenues were then 306*l.* 11*s.* 4½*d.* The priory was granted soon after by the king to Thomas, Duke of Norfolk, whose descendants alienated the site to Thomas Gresham, Esq., during the reign of Elizabeth, and from that gentleman the rights were conveyed to Thomas Cecil, afterwards Earl of Exeter. His son, William, Earl of Exeter, sold the priory to Sir Edward Coke, whose descendant, the present Earl of Leicester (late Mr. Coke), now possesses the estate.

The best description of the priory as it was is given in Blomfield's work, which we therefore quote. "The site of the priory church lies west of the castle, was a venerable large Gothic pile of freestone, flint, &c., and built in a cathedral or conventual manner. Great part of the front or west end of it is still remaining, where the principal entrance was through a great arch, over which was a stately window. On each side of the great door were doors to enter into the north and south aisles. Under the tower was an arch which, as the grand door, served for an entrance into the nave or body. At the north and south ends of this front or west end stood two towers supported by strong arches and pillars. The nave or body had twelve great pillars, making seven arches on each side, the lowest joining to the towers. On the east end of the nave stood the grand tower, supported by four great pillars, through which was the entrance into the choir. On the south and north sides of this tower were two cross aisles or transepts; and at the end of the north transept there seems to have been a chapel or vestiary. The choir was of equal breadth with the nave and aisles, but much shorter, and at the east end it was in form of a chapel; and here stood the high altar, as I take it. The cloister was on the south side of the church, and had an entrance into it at the west end of the south aisle near to the tower, and another at the east end of the said aisle near the grand tower. The chapter-house seems to have joined the east side of the cloister, and the dormitory to have been over the west part of the cloister. West of the cloister and adjoining was the prior's apartment, now converted into a farm-house. In a large room above stairs, called now the prior's dining-room, is a curious bow-window of stone, consisting of nine panels. In the first were the arms of the priory painted on glass [and in the others the arms of the Earls of Warren and Arundel, of Mowbray, Duke of Norfolk, and of England and France. From an inscription on one of the windows it] appears that this window was built by John Winchelsey, prior in the reign of Henry VII. or Henry VIII. Afterwards it might be converted into a dining-room; but that it was originally a large chapel, and this room was only the west end of it, is apparent. It extended to the south tower of the church, where, at the east end of it, is a large window, as in a chapel, and a step or ascent here, as to an altar; and on the south wall near to this ascent is an arched carved seat of stone rising in form of a pyramid, with the shield of the Earl Warren alone, which testifies it to be an antique pile built in their time, before the patronage of the priory came to the earls of Arundel; and at the north-east corner, near to the altar-piece, is a door-place with a stone arch, and here was a stone staircase which led down into the cloister. In another room was, a few years past, in a window, the broken portraiture of one of the earls of Arundel in armour, with a broadsword in his hand. The grand entrance was north of the priory church, where is now standing a large and stately gatehouse of freestone. The whole site was enclosed with a lofty stone wall, good part of which is still standing." So far Blomfield's description in 1775. Since then various dilapidations have taken place; but the outline of the ruins as he describes them are yet traceable. The extent of ground occupied by the priory within the wall was no less than twenty-nine acres. The chief remains are now some large columns of the nave (only one in a perfect state), the walls of the transepts, considerable portions of the conventual buildings to the south of the priory church, the prior's house adjacent to the south-west angle of the church, the barn of the monastery, and the porter's lodge. The great object of interest in the remains is of course the beautiful western front. This is a fine specimen of enriched Norman architecture. The large window over the central doorway forms, however, an exception to the general style of the front, being of what is called the perpendicular architecture: it is much mutilated. The general effect of the ruins is exceedingly picturesque and impressive: indeed, taken altogether, there are few finer things of the kind in Great Britain than Castleacre Priory.

RUSSIAN TRAVELS IN SEARCH OF A NATIONAL RELIGION.

That individuals should have their religion to choose, from the non-possession of any, is unfortunately too common to be remarkable; but that a populous nation should seek this desideratum by sending forth their authorised emissaries *in search of a religion*, is one of the curiosities of Russian history.

The tutelary deities of Russia were arrayed in all those terrible and savage qualities so congenial to the fierce and uncultivated minds of a people deeply sunk in the slough of barbarity. The rites which superstitious ignorance performed in honour of these idols were impious in the extreme. Nothing was supposed to delight their gods but scenes of madness, cruelty, and licentiousness; whilst their wrath could only be appeased by human sacrifices.

In this distracted state of popular delusion—in this fulness of ignorance, which darkened all the region of Russia—by the interposition of Divine Providence the sun of Christianity arose. The first ray of evangelical light seemed to beam on the Russians about the year 870, by the instrumentality of Oskold, Prince of Kief, during the reign of Rurik, the founder of the Russian monarchy. In one of those sudden excursions of piratical adventure which perhaps had before alarmed the timorous Greeks, the enterprising Oskold marked out their magnificent city of Constantinople as the grand object of his ambition. This daring attempt was made with two hundred boats, or monoxyla, as they were called, and, without the least opposition, they passed the Thracian Bosphorus, and succeeded in occupying the port of Constantinople. The Greek emperor, Michael the Third, was absent, having left his capital with the vain hope of chastising the Saracens. On the first news of these unwelcome and dangerous visitors, he returned with his army to revive the fainting courage of his capital. In effecting a landing at the palace stairs, the emperor, from his vicinity to the invading Russians, had to encounter numerous difficulties. This imbecile sovereign of the Greeks, instead of securing the relief of his people by a determined spirit of zeal and

patriotism, directed his agitated steps to a church of the Virgin Mary, where, with the patriarch, he passed the whole night in prayer. By the injunctions of the patriarch, the garment of the Virgin Mary, a most precious relic, was taken from the sanctuary and dipped into the sea. A tempest released them from their present fears by compelling the Russians to a precipitate retreat, which was attributed by their blind credulity to the influence of the "mother of God." Oskold, however, soon returned, and succeeded in his enterprise. After enjoying the glory of humbling the Greek pride, he demanded a peace, which was readily granted by their fears. After the terms of the treaty had been adjusted, Oskold expressed a wish to receive the sacred waters of baptism, and the august ceremony took place accordingly.

Under the auspices of Oskold, a Greek bishop, with the title of metropolitan, is supposed for the first time to have administered the sacrament and performed his priestly functions in the church of Kief. But the salutary vegetation of the Gospel was blighted by the ungenial touch of these barbarians, since, after the death of Oskold, this short glimpse of holy light was soon involved in a cloud of ignorance so thick and heavy as to obscure almost all traces of their Christian conversion. This darkness began to disappear when the Russian throne was mounted by the Princess Olga, a woman pre-eminently gifted with those qualifications which imprint the duty of obedience on minds the least tinctured with the virtues of civilization. Although gross idolatry and barbarism overspread her country, yet the precepts and example of the Greek missionaries transplanted by Oskold made an impression on her heart too deep to be easily effaced. Accordingly, moved by the wish of embracing Christianity in the most august manner, or by the less spiritual desire of extending the circulation of her trade, or the very wise one of civilising her people, she sailed from Kief to Constantinople.

The emperor Constantine Porphyrogenitus welcomed her arrival with all the honours appropriate to her rank, and with all the forms and ceremonies which could flatter her female vanity and display the transient greatness of his luxury and splendour. The emperor himself led her to the baptismal font, where she received the name, ever venerated in after-time, of the Empress Helena.

On her return to Kief and Novgorod, she pertinaciously adhered to her new religion, notwithstanding the obstacles presented by her own family and the impenetrable barbarity of her subjects. But this great princess, deservedly so called (for in this barbarous age she constructed towns and villages, formed bridges and roads for the benefit of traffic, and established institutions of general utility), had soon to feel her weakness in so gigantic a task as that of indoctrinating her rugged barbarians. She was doomed sensibly to feel the feebleness of her power in advanced life, and the obstinacy of antient prejudice, when she aimed with her utmost energy to wean her son and the whole nation from their attachment to the gods of their fathers.

Proud and sanguinary, and strangers to all those pursuits which give birth to acts of humanity and justice, her people scorned all the mild inculcations of the new faith. In answer to her exhortations, her son Sviatoslaf insultingly demanded whether she wished him to become an object of contempt and derision to his companions. From the temper of this interrogatory, it requires no great depth of sagacity to have foreseen that the Christian religion would soon shrink into insignificance and obscurity on the death of Olga. Indeed, so rapid was its decline, that the churches erected by the fervent zeal of this princess could scarcely preserve it from total extinction.

It was not till about the year 986, when Vladimir the First had attained the maturity of his fame, that paganism was to receive its death-blow in the Russian territotories on the revival and firm establishment of Christianity. The military renown, the increasing wealth, the unrelaxing firmness, the extensive authority of Vladimir, now began to command the fears and to invite the attention of the neighbouring potentates. By gifts they courted his esteem, by embassies they solicited his conversion to their respective creeds. Nearly at the same time, it is said, were presented to him deputies from the Pope and from the Jews established among the Kozares. But all their prospects of success were darkened by the mission and lively eloquence of a Greek metropolitan. This prelate, whom the chroniclers dignify with the appellation of a philosopher, though he failed in making an absolute proselyte of his illustrious auditor, was, however, dismissed with his friendship and gifts; a happiness which the rest had sighed for in vain. Indeed, so strong was the impression made on the heart and understanding of Vladimir by the discourse of this theological advocate, that he dispatched six or ten Russians to inspect minutely the religious principles and rites of different nations; in short, to travel in search of a national religion.

These deputies in search of a national faith first directed their course to the Bulgarians (eastward of Russia), the zealous champions of the warlike prophet of Mecca. But they soon changed their abode, little moved by their veneration for the doctrines of the Koran. They afterwards visited the Latin churches of Germany, whose want of external ornament they beheld with emotions of pity and contempt. But on their arrival at Constantinople, they gazed with admiration and delight on the magnificent dome of Saint Sophia; and their attention was arrested by the pompous and alluring embellishments which adorned their altars; by the pictures of their saints and martyrs; by the rich vestments of their priests; by their worship of images and relics; and by the order of their ceremonies, where music and fragance lent their aid in the pageant. A religion, therefore, which embraced such a succession of splendid rites, was soon considered, by their uncultivated intellects, to contain the very essence of Christianity.

With minds heated and enraptured by these gaudy though perhaps not unmeaning spectacles, they hastened their return to Vladimir. To his inquiries on the events of their mission, they gave concisely their account of the Latin ceremonial; whilst they expatiated with enthusiasm on the beauties of Constantinople. We thought ourselves transported into Heaven, exclaimed they, to their attentive monarch; nor were they slow to believe that a choir of angels came down each day from the skies to join in the sacred songs and worship of the Greeks. Thus did the splendour of the Grecian ceremonies eclipse all hope of their conversion to the Latin church. When the curiosity of the Prince was satisfied, they implored his permission to be initiated into the pleasures of religious adoration at Constantinople.

No sooner had the boyars of his council perceived the effects of this recital on the mind of Vladimir, than they cried out, that the religion which could be honoured by the praises of the deputies, and embraced by the pious Olga, must be worthy of belief.

But though Vladimir listened to the voice of reason, or rather, to the dictates of his own inclinations, yet his conversion was retarded for the want of Greek priests. To demand them of the emperor, he conceived, would be a species of homage, at the very idea of which he revolted. The barbarian therefore resolved to wrench with his sword that baptism and instruction which to have possessed in a proper manner would have been thought disgraceful. This wild plan of Christianizing his country was pursued with industry and executed with spirit. An immense army, composed from the flower of his empire, soon passed the Taurican Chersonese, and marched to Theodosia, the modern Kaffa. Before this place he is said to have addressed the Almighty power, in a speech worthy of himself, his country, and his times. "O

God, enable me to overcome this city, that from hence I may transport priests and Christians into my country, into my dominions, whose piety and learning may instruct us in the true exercise of religious worship." He then attacked the city, unaided by any of those implements of assault which expedite the labours of a siege. But his slow progress, and the number of men which he lost, might have excited, in a less ignorant mind, some apprehensions that his present conduct was a direct violation of those moral and Christian duties which he so anxiously wished to discharge. After pressing the siege for six months with an ineffectual vigour, the pagan began to suspect that he had adopted an expedient by no means favourable to his present conversion. With the shame of relinquishing his enterprise, he now entertained the most serious fears that he must also renounce the pious object which induced him to undertake it. These fears, however, were at length quieted in a most auspicious manner. A letter fixed on an arrow was shot from the top of the ramparts, by which he learned that the method of subduing the city was to cut off their supply of water. Vladimir soon discovered the fountain, and cut off the pipes that conveyed the water to the besieged. The difficulties then vanished; the complaints of thirst were heard, felt, and soon remedied by a general surrender. In possession of Theodosia, he saw himself master of the whole Chersonese. By this victory his power was enlarged and his fancy gratified. But the enforcement of baptism formed not the sole object of his ambition; he aspired to mix his blood with that of the Cæsars, by a marriage with the princess Ann, sister of the reigning emperors Basil and Constantine. His pretensions were enforced by the promise of conversion, and by the threat that Constantinople might soon expect the same fate as Theodosia, should his demands be refused. After some delay, they consented to the first proposal. At the same time, therefore, and in the city of Cherson, the rites of baptism and marriage were solemnised by the Christian pontiff. Vladimir restored the city to his brothers-in-law; whilst abbots, priests, images, relics, holy books, and sacred vessels were transported into Russia as rewards of this conquest and alliance.

On his return to Kief, every indignity which could be devised by the imagination of Vladimir was offered to those idols which he had so long adored. Under the sagacious view of diminishing their estimation, and consequently of obtaining a more ready acquiescence to his devout example, Peroun, the god of thunder, and the most august of their divinities, at his despotic command was tied to the tail of a horse, and dragged through the streets of Kief; whilst twelve soldiers, during this procession, battered with clubs the golden head and silver ears of the misshapen image; after which it was thrown into the waters of the Borysthenes.

After this act of expiatory vengeance, an edict of Vladimir proclaimed to his subjects that all those who refused the rites of baptism would be considered and treated as enemies of Jesus Christ and of their prince. The moment this order was published, many thousands of Russians flocked to the rivers to receive the sacrament of baptism.

On this occasion, we hear of no martyrs for the ancient faith; no bold thinkers who durst offer their blood on the altar of the mind's freedom to receive or reject creeds; all was obedience and alacrity to adopt the religion of the sovereign. No persecutions or admonitions were necessary to strengthen the decree, since they all tacitly submitted to the truth and goodness of a doctrine which had been adopted by their monarch and his boyars. Such was the establishment of Christianity in Russia, which soon levelled with the ground the gross and incongruous edifice of pagan superstition.

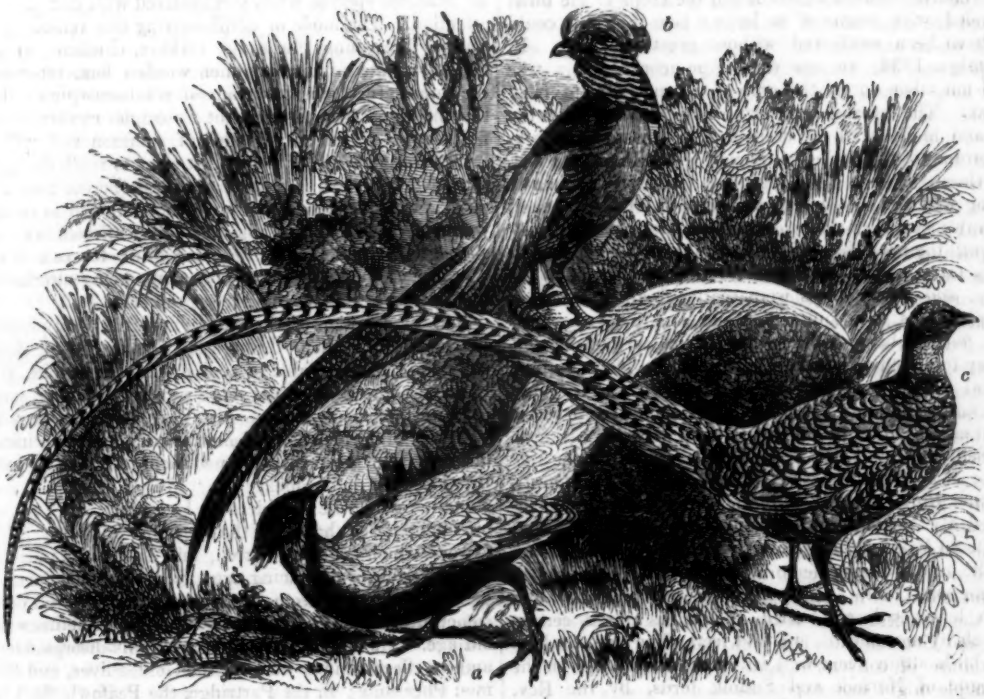
Education one of the Remedies of Economical Evils.—There are no means of facilitating the transfer of labour equal to the growth of intelligence among the people. Ignorance believes itself to be fated to remain in the spot where it was born, and to follow throughout life the occupation to which it was bred: its vision is confined to a narrow circle of observation, beyond which it is afraid to move. Hence it is that thousands, who might better their condition if they would rouse themselves to make the effort, only do so when driven to it by extreme necessity. This is the case among a large class of weavers. There are multitudes whom no evidence of the decaying state of the trade will induce to quit the loom, nor will they do so until want overtakes them in its most frightful form. A man accustomed to reflect on his position, and who has read of, or noted in his experience, the many resources of which industry and ingenuity have availed themselves in similar circumstances, does not wait to be overwhelmed in the common storm, and finds, in time, a port of refuge. This is one reason why the weavers now appear, as a body, less intelligent than those of former years. The educated portion have left the trade; those among them who have not done so are either in good circumstances, or the old, to whom the idea of change comes too late. I have conversed with many of this class,—men who, having enjoyed the benefit of instruction, have appreciated its advantages, and given it to their children. Their children had not been brought up to the hand-loom.—*Mr. Hickson's Report.*

Elephant-catching.—There are several different ways of catching elephants in Ceylon; but that requiring least preparation and most dexterity is noosing them in an open forest. For this purpose, having ascertained the position of one, the hunters steal up against the wind, carrying their atmaddoos (strong ropes made of bullock's hide, with a noose at one end). Having got close to the animal's flank, they watch an opportunity, either when he starts off or attempts to turn round, of slipping the noose under a hind foot, at the same time taking a turn round a tree with the other end of the rope. Checked and tripped, the animal stumbles; and before recovering, additional hide-ropes are fixed to his other legs, which are afterwards entangled by cords made from the keetul (sugar-palm) tree, and twisted from one foot to another, in the form of a figure of eight. The elephant is then fixed to the nearest tree, and a shed erected over him, until tame ones can be procured to escort him to the stable.—*Major Forbes's Eleven Years in Ceylon.*

Labour and Capital.—It is easy to discover that the source from which capital is ultimately derived is labour Production of necessity begins with the hands, and nothing else, of the labourer. It is sufficiently evident that without saving there could be no capital. If all labour were employed upon objects of immediate consumption, which were all immediately consumed, such as the fruit for which the savage climbs the tree, no article of capital, no article to be employed as a means to further production, would ever exist. To this end something must be produced which is not immediately consumed, which is saved and set apart for another purpose. Every article which is thus saved becomes an article of capital.—*Mill's Political Economy.*

Poetry.—The present life is not wholly prosaic, precise, tame, and finite. To the gifted eye it abounds in the poetic. The affections which spread beyond ourselves and stretch far into futurity; the workings of mighty passions, which seem to arm the soul with an almost superhuman energy; the innocent and irrepressible joy of infancy; the bloom, and buoyancy, and dazzling hopes of youth; the throbbings of the heart when it first wakes to love, and dreams of happiness too vast for earth; woman, with her beauty, and grace, and gentleness, and fulness of feeling, and depth of affection, and her blushes of purity, and the tones and looks which only a mother's heart can inspire;—these are all poetical. It is indeed good to feel that life is not wholly usurped by cares for subsistence and physical gratifications, but admits, in measures which may be indefinitely enlarged, sentiments and delights worthy of a higher being. The power of poetry to refine our views of life and happiness is more and more needed as society advances. —*Dr. Channing's Remarks on the Character and Writings of Milton.*

THE COMMON PHEASANT.



[*a*, Silver Pheasant; *b*, Gold Pheasant, *c*, Reeves's Pheasant (Syrmaticus Reevesii)—males.]

In a former Number (No. 282) we have given a representation of the Horned Pheasant and an account of the principal foreign pheasants. In the present article we shall confine ourselves to the common English pheasant; but as the form of that is too well known to require a pictorial illustration, we have given a group of three of the most splendid of the foreign birds of this species.

The two first of these (natives of China) are common in almost every aviary, and there is no reason why they should not thrive well if turned out in our preserves; the second species has, we believe, been so turned out with success; the last is also found in China, but, as it would seem, on the very confines of the empire. It is very rare in Pekin. Dr. Latham's description was taken from Sir John Anstruther's drawings, and from some writing under them in the Persian language it appeared that the bird was called *Doomdurour*, or Long-tail, and it was found on the snowy mountains of Surinagur. To Mr. Reeves we are indebted for the first individual ever brought alive to Europe. It was a male, and continued to live for some time in the Garden in the Regent's Park. Tail-feathers from it were exhibited to the Society in 1831, measuring each about five feet six inches in length. A second male specimen was also sent to their menagerie by the same liberal donor in 1834. Hybrids were obtained, one of which is, we believe, still alive at the Garden, from one of these birds and the common pheasant.

The generic character of the common pheasant is as follows:—Bill of mean length, strong; upper mandible convex, naked at the base, and with the tip bent downwards. Nostrils basal, lateral, covered with a cartilaginous scale; cheeks and region of the eyes destitute of feathers, and covered with verrucose red skin. Wings short, the first quills equally narrowed towards their tips, the fourth and fifth the longest. Tail long, regularly wedge-shaped, and composed of eighteen feathers. Feet having the three anterior toes united by a membrane as far as the first joint, and the hind toe articulated upon the tarsus, which in the male birds is furnished with a horny cone-shaped sharp spur. (Gould.)

The type of this genus is generally considered to be the *Common Pheasant*, *Phasianus Colchicus*, Linn., a bird which, though not originally British, is completely naturalised in our islands, and indeed appears to adapt itself with great facility to most countries where ordinary care is taken to preserve it and the temperature is not too low for its constitution. The species is too well known to need minute description, but a summary of its habits will be interesting, particularly at this season of the year, and we shall endeavour to lay before the readers some information on these points.

Hen pheasants in this country begin to lay in April, and deposit from eight or ten to fourteen olive-brown eggs in a rough nest on the ground. Sometimes two will lay in the same nest. The young make their appearance towards the end of May or beginning of June.

Where the country is favourable, it is easy to get up a head of pheasants, with the aid of good keepers; but it is more difficult to keep them at home, for they are wandering birds, and will often leave the place where they are bred, in search of food more agreeable to them and localities more congenial to their habits. Warm covers and water are absolutely necessary; and if they are plentifully supplied with grateful food, but few of them will become vagrants. Jerusalem artichokes, potatoes, and buckwheat, as well as barley, are favourites. Small stacks of the latter grain in the straw are frequently placed about the preserves, and there the pheasants may be seen scratching at their feeding-time; but this mode of supply is objectionable, as the poacher soon finds out the several points of attraction, and avails himself of them accordingly. Mr. Yarrell states that one good mode of inducing them to stop at home is to sow, in summer, beans, peas, and buckwheat mixed together, leaving the whole crop standing on the ground. The strong and tall

stalks of the beans carry up and sustain the other two, and all three together afford, for a long time, food and cover. (*Hist. of British Birds.*) The same author tells us that at the end of autumn he has found the crops of the birds distended with acorns of so large a size that they could not have been swallowed without great difficulty. In December, 1834, we saw eight ripe acorns and a ripe hazel-nut taken out of the crop of a hen pheasant from Sussex. The acorns had begun to germinate with the heat and moisture of the crop, and they were sent up to the gardens of the Zoological Society in the Regent's Park, and there planted. For autumnal and winter home-feeding we have seen potatoes used with excellent effect, not only in keeping the birds from wandering, but in increasing their weight and fatness. Carts loaded with raw potatoes were, from time to time, driven into the covers, and the potatoes were scattered about by hand. The pheasants soon found them out, and throve accordingly, without being collected together at particular spots, as they too often are to their destruction. They are very general feeders; neither blackberries, sloes, nor haws come amiss to them, and grain, seeds, and tender leaves find their way into the pheasant's crop as well as insects. Mr. Selby observed that these birds sought after the root of the acrid bulbous crowfoot (*Ranunculus bulbosus, Common Buttercup*) in May and June, and a friend informed Mr. Yarrell that they also feed on the Pilewort Crowfoot (*Ranunculus ficaria*). Mr. Selby further states that the bulb of the garden tulip is an article of diet which the pheasant omits no opportunity of obtaining, and which, however deeply buried, the bird is almost certain to reach by means of its bill and feet. The size to which these birds attain when well fed is considerable. In the catalogue of Norfolk and Suffolk birds, by the Rev. Revett Sheppard and the Rev. William Whitear (*Linn. Trans.*, vol. xv.), the weight of a cock pheasant killed at Campsey Ash, where the birds were well fed with potatoes, buckwheat, and barley, is stated at four pounds and a half. "Some winters since," says Mr. Yarrell, "my friend Mr. Louis Jaquier, then of the Clarendon, produced a brace of cock pheasants which weighed together above nine pounds. The lighter bird of the two just turned the scale against four pounds and a half; the other bird took the scale down at once. The weights were accurately ascertained, in the presence of several friends, to decide a wager, of which I was myself the loser."

Among the diseases and disorders to which the pheasant, in common with other gallinaceous birds, is subject, the fatal *gapes* holds a prominent place. The cause of this disease is an intestinal worm, which adheres to the internal surface of the trachea, and causes death by suffocation, sometimes arising from inflammation of the part, and not unfrequently by actual obstruction. This *entozoon* is *Syngamus trachealis* (*Distoma lineare* of Rudolphi, *Fasciola Trachea* of Montagu), and a most curious animal it is. The bifurcation of the anterior extremity was taken by earlier observers for a double head, and thence probably came the name *Distoma* (double-mouth); but this bifid termination is in reality due to the two sexes. The female is long; and the short male is affixed to her for life by means of an integument which holds him to her, but which, if cut open, exhibits an otherwise free and distinct animal. In the museum of the Royal College of Surgeons, Nos. 199, 200, 201 (*Preparations of Natural History in Spirit*), exhibit this destructive worm. The first shows several specimens from the trachea of a chicken; the second consists of a small portion of the trachea of a bird laid open, and exhibiting one of this species which has lost its original pink colour and become blanched in the spirit; and in the third is to be seen the trachea of a partridge completely choked up by them. Mr. Selby observes that many recipes for the cure of this fatal malady (which is provincially called the *Nax* in Northumberland) have been suggested, but that none of them seem to be effectual, except the one recommended by Montagu, namely, fumigating by tobacco, found to be an infallible specific when administered with due care and attention. The mode of administering this remedy is by putting the young pheasants, turkeys, chickens, or partridges affected into a common wooden box, into which the fumes are blown by means of a tobacco-pipe. That this often succeeds is true, but we cannot confirm its infallibility in all cases: a pinch of common salt, put far back into the mouth of the patient so as to reach the upper part of the trachea, is a neater and less operose method of cure. With reference to this, it has occurred to us that we never heard of any pigeons being affected with the gapes, and the fondness of these birds for salt is well known. We have heard of a sparrow being attacked by this *entozoon*, but we did not see the case.

The assumption of the plumage of the cock pheasant by the female, when, through old age or organic defect, she is no longer capable of reproducing the species, is by no means uncommon, not more rare indeed, if so much, as it is in the peafowls. Mr. Yarrell, in his excellent 'History of British Birds,' now in course of publication, observes that these cock-plumed hens are usually called by sportsmen and gamekeepers "Mule Pheasants," a designation which he considers to be correct, since some of our dictionaries show that the term *Mule* is derived from a word which signifies barren, and such hen pheasants are incapable of producing eggs, from derangement of the generative organs; sometimes an original internal defect, sometimes from subsequent disease, and sometimes from old age. He adds that he has seen this disorganization and its effects among birds in the Gold, Silver, and Common Pheasants; in the Partridge, the Peafowl, the Common Fowl, the Crowned Pigeon, the Kingfisher, and the Common Duck; in the latter species he states that the change, in two instances, went on even to the assumption of the two curled feathers above the tail.

That hen pheasants which have begun to put on the livery of the male are not always incapable of producing eggs, is a fact for which we are indebted to Sir Philip Grey Egerton, Bart., well known for the acuteness of his observations in many departments of natural history. Sir Philip informs us that about four years ago a hen pheasant at Oulton Park, Cheshire, which had nearly assumed the plumage of the cock, laid a nest full of eggs, from which she was driven by the curiosity of persons who came to gaze at so strange a sight. She then laid another nest full of eggs, sat upon them, and hatched them; but the young all died soon after they were excluded. This is a very curious case, and seems to show that though the capacity of producing eggs still remained, the organic defect was sufficient to prevent the production of a healthy offspring.

The union between the common hen and the cock pheasant is by no means rare, as is well known to those whose homesteads border upon pheasant preserves: the produce of this union is called a *Pero*. Many of these, some of them very fine birds, have been kept together in the Gardens of the Zoological Society in the Regent's Park, but they never, as far as we have been able to learn, exhibited any inclination to breed. They are generally considered, as Mr. Yarrell observes, to be unproductive among themselves, all being half-bred; but the case is different when they are paired either with the true pheasant or the common fowl. Edward Fuller, Esq., of Carleton Hall near Saxmundham, has recorded that his gamekeeper had succeeded in rearing two birds from a barn-door hen having a cross from a pheasant, and a pheasant cock, which he presented to the Zoological Society. On the same evening when these three-quarter-bred pheasants were noticed, hybrids between the Pheasant and Common Fowl, the Common Pheasant and the Silver Pheasant, and the Common Pheasant with the Gold Phea-

sant, were placed on the Society's table for exhibition. (*Zool. Proc.*, 1836.)

DOMESTIC CHEMISTRY.—No. VIII.

SOAP.

[Continued from No. 542.]

It is well known that oils and fatty substances do not unite with water, but they enter largely into the composition of soap; and as this article is soluble in water, it becomes necessary to inquire how a soluble material is formed out of materials which are naturally insoluble.

In a recent paper on sulphate of magnesia, or Epsom salts, we stated that magnesia is almost insoluble, but that by the addition of sulphuric acid a salt is produced which is endowed with a high degree of solubility. A similar example is afforded by the addition of an alkali, such as potash or soda, to fatty substances: they undergo a remarkable change called saponification, or soap-making. The alkali first converts the fat into three peculiar acids, which unite with the alkali, whereby compounds are formed to which the general name of *soap* is applied. There are various kinds of soap known to the chemist, but the best known and most generally useful is that which we are about to describe, viz., common soap, which, being soluble in soft water, is extensively used as a detergent.

Soap was, to a certain extent, known to the ancients. Pliny speaks of it as being made of fat and wood-ashes, and refers the invention to the Gauls. In Holland's translation of Pliny the passage reads thus:—"*Sope* is an invention derived by the French for to colour the haire of the head yellow; made it is of tallow and ashes: the best of all other is that which they make of beech-wood ashes and mutton sewet; and the same after two manner of wayes; either thicke and hard, or else liquid and soft; but the one as well as the other is verie much used in Germanie, and a great deale more indeed by men than women." The practice of filtering water through the ashes of wood-fires is very old, and is still observed in most places where wood is the common fuel. The alkaline liquor, called *ley*, thus obtained, is a solution of impure potash: it acts as a detergent by combining with greasy substances and rendering them soluble; and thus the business of the laundress is often conducted without the use of soap.

America supplies large quantities of potash, in consequence of the abundance of wood in that country. The alkali is procured by burning vegetable matters to ashes by a slow fire, in a kiln or in pits: even timber, which in many parts of America is considered rather as an encumbrance to the soil than as a valuable property, is often burnt solely for the sake of its alkali. The ashes thus procured are thrown into wooden cisterns, which have a plug at the lower part of one of the sides, under a false bottom: water is then added, and some quicklime stirred in. After remaining for a few hours, the soluble parts of the ashes are dissolved; the clear liquor is drawn off; evaporated to dryness in iron pots (whence the name *pot*-ash is derived); and, lastly, fused at a red heat into compact masses constituting the potash of commerce. This substance being subjected to certain purifying processes, a salt is obtained in a round *pearly* form, to which the name *pearl*-ash has been applied.

Potash, of which we have just spoken, is one of the ingredients employed in making *soft soap*: the alkali employed for the corresponding purpose in making *hard soap* is *soda*. Most of the algæ, or sea-weeds, but especially the fucus and salsola, yield soda by burning. They are dried, and then burnt in a kiln formed of loose stones, whereby the soda, together with some earthy matter and neutral salts, fuses into a mass, in which state it is sent into the market. The sea-weed which furnishes this crude soda is called *kelp* in Scotland, *barilla* in Spain, and *varec* in France. The proprietors of the shores of the Scottish Islands and Highlands formerly derived very large revenues from kelp; but when the duty was taken off salt, crude soda was manufactured from it; and now nearly all the soda and carbonate of soda of this country are made by the decomposition of salt. We need not describe the interesting processes for procuring soda from sea-weed, because this once flourishing trade is now nearly extinct; we therefore pass on to the consideration of the employment of the alkali in making soap.

Hard soap, which is the most important kind, is, as we have said, produced by the action of soda upon fatty substances; but before the manufacture can be commenced, it is necessary to purify the crude soda. For this purpose it is pounded, and stratified with a quantity of quicklime (proportionate to the quantity of carbonic acid in the soda) in large vats furnished with false bottoms perforated with holes, and having a lateral opening beneath; so that when water is added to the vats, a strong caustic ley is obtained, clear and purified by filtering through the beds of lime. The ley being thus prepared, a quantity of tallow or oil is weighed, and put into the soap-pan or boiler: when sufficiently heated, the workman adds the ley, and stirs up the mixture. After boiling gently for four hours, the fat will have become completely saponified. The fire is then removed, and the contents of the pan left for about one hour to cool; when the spent leys, now no longer alkaline, are drawn off. Fresh ley is added, and the boiling renewed as before: this process is performed a third time in the course of one day's work. Next day the same routine is resumed with stronger leys, and so on day after day until the contents of the pan are of sufficient consistence to solidify on cooling. It is then laded into a large square vessel, composed of a number of frames superposed; so that when the soap has become hard, each layer of framework can be removed from the top downwards: the soap is then cut into cakes, by passing a piece of wire through it; and these cakes are again divided into the long pieces which are seen at the retail dealer's. In some factories, the frames are often piled up to the height of ten feet, and bound together by iron rods, forming a sort of well, capable of holding two tons of soap. The mottled or marbled appearance of some soaps is produced by introducing a little strong ley of crude soda into the nearly finished soap.

Yellow or resin soap is made in a similar manner to that just described, with the addition of a quantity of resin, which is generally added to the last charge of ley. Resin is soluble in alkaline solutions, but is not, like fat, susceptible of saponification. The quantity of resin employed is equal to about one-third or one-fourth of the tallow: it is reduced to a coarse powder, and mixed up by means of a rake with the contents of the pan. The boiling is continued with an excess of caustic ley until the resin is thoroughly incorporated with the soap paste. Palm oil is usually added to brighten the colour. Silica or flint soap, lately introduced, is formed by reducing flints to powder, and then boiling them in a strong solution of caustic soda; a compound is thus formed called silicate of soda, from ten to thirty per cent. of which is added to the pasty mass in the soap-pan. Silica soap possesses very strong detergent properties, but it is hard and somewhat gritty to the touch: it is, we believe, a patented invention.

When potash is exposed to the air it absorbs moisture, and soon becomes liquid; this is not the case with soda; and hence soda soap remains hard, and potash soap becomes soft. In this country soft soaps are made with animal or vegetable oils mixed with tallow; the potash ley is added, and the mixture is heated until it acquires a thin gluey consistency: more of the ley is added, and the boiling is continued until the mixture is thick enough for use.

The toilet-soaps sold by the perfumer are made in accordance with a large number of recipes; and each perfumer generally prides himself on some secret process which he thinks superior to all the rest. The principle, however, upon which all soaps are made will be easily gathered from the foregoing details: for hard toilet-soaps soda is the alkali employed; and potash for those that are to be soft. Tallow, hog's lard, oils of cloves, of almonds, and of palm are among the fatty substances generally used; while the pleasing odour of toilet-soaps is conferred by some of the essential oils and other perfumes. Some of those soaps which appear most beautiful to the eye possess very feeble detergent qualities; others, when carefully made from a mixture of two or three kinds of soap, are agreeable additions to the toilet. Perhaps the most celebrated fancy or toilet soap is the soap *à la rose*, which is made as follows:—Thirty pounds of olive-oil soap and twenty of good tallow soap are reduced to thin shavings by means of a plane with the under side turned up so that the soap may be moved along it. The shavings are then put into an untinned copper pan, and heated by being placed in hot water. If the soap be dry and hard, the melting must be assisted by the addition of water; but this is generally avoided by choosing fresh soaps, since those which have been long kept do not form an agreeable paste. The heat is increased as the fusion advances; and when the soap is thoroughly liquefied, an ounce and a half of vermillion in fine powder is added, and well mixed with the paste. The temperature is then lowered, and small quantities of the essences of rose, cloves, cinnamon, and bergamot are added. The soap is then cast into moulds or frames, and soon sets. Dr. Ure describes this soap, when carefully made, as being "perfect in every point of view; possessing a delicious fragrance, equally rich and agreeable; a beautiful roseate hue, and the softest detergent qualities, which keeping cannot impair. Such a soap has, in fact, been known to retain every property in perfection during four or five years."

It may be well here to explain in a few words the reason for a fact which is well known to those who have to make a frequent use of soap, viz. the difficulty of using it with hard water. Hard water is that which by contact with various mineral bodies in and on the earth, acquires such a quality as to decompose soap instead of dissolving it; and the reason is, that such water usually contains some compound of lime. Suppose, for example, it contains sulphate of lime: soap we have stated to be a compound of certain fatty substances with potash or soda; but these substances unite more readily with lime than with those alkalis; and the consequence is, that when soap is rubbed in hard water, the lime quits the sulphuric acid to unite with the fatty substance; and the potash or soda unites with the sulphuric acid thus liberated from the lime, forming a soluble sulphate of potash or soda, and an insoluble curdy matter, which is familiar to those who wash in hard water. By throwing a quantity of pearlash or soda into the hard water, the sulphuric acid unites therewith, and the lime falls down as an insoluble powder; and thus the soap is not decomposed. Hair-dressers know this by experience, and employ one or other of those alkalis. It will thus be seen why it is that the employment of soft water for all purposes of washing and cleansing is both more economical and more effective than that of hard water.

Habits of Wolves.—In well-inhabited countries, where wolves are an object of constant persecution, they never quit cover to windward; they trot along its edges until the wind of the open country comes toward them, and they can be assured by their scent that no suspicious object is in that quarter; then they advance, snuffing the coming vapours, and keep as much as possible along edges and brush-wood to avoid detection, pushing forward in a single foray to the distance of many miles. If there be several, they keep in file, and step so nearly in each other's track, that in soft ground it would seem that only one had passed. They bound across narrow roads without leaving a foot print, or follow them on the outside. These movements are seldom begun before dusk, or protracted beyond daybreak. If single, the wolf will visit outhouses, enter the farmyard, first stopping, listening, snuffing up the air, smelling the ground, and springing over the threshold without touching it. When he retreats, his head is low, turned obliquely with one ear forward, the other back, his eyes burning like flame. He trots crouching, his brush obliterating the track of his feet, till at a distance from the scene of depredation; when going more freely, he continues his route to cover, and as he enters it, first raises his tail, and flings it up in triumph. It is said that a wolf, when pressed by hunger, and roaming around farms, will utter a single howl to entice the watch-dogs in pursuit of him. If they come out, he will flee till one is sufficiently forward to be singled out, attacked, and devoured; but dogs in general are more cautious, and even hounds require to be encouraged, or they will not follow upon the scent.—*Col. H. Smith's Habits of Dogs.*

Employment of Children in Coal-Mines.—The children go down with the men usually at four o'clock in the morning, and remain in the pit between eleven and twelve hours. When they come up they are allowed to play about for a little while by their parents, but are sent early to bed that they may rise again at the same early hour the next morning. To ascertain the nature of the employment of these young children, I embraced an opportunity of visiting a pit in the neighbourhood of Newcastle. Descending a shaft six hundred feet deep, I went some distance along a subterraneous road, which, I was told, was three miles in length (the overman going before me, with a Davy lamp in one hand, and, as if to neutralise the precaution, a lighted candle in the other). To the right and left of one of these roads, or "ways," are low galleries, called "workings," in which the "hewers" are employed, in a state of almost perfect nudity (on account of the great heat), digging out the coal. To these galleries there are traps or doors, which are kept shut, to guard against the ingress or egress of inflammable air, and to prevent counter-currents disturbing the ventilation. The use of a child of six years of age is to open and shut one of these doors when the loaded corves or coal-trucks pass or repass. For this object the child is trained to sit by itself in a dark gallery for the number of hours I have described. The older boys drive horses, and load the corves, but the little children are always trap-keepers. When first taken down they have a candle given them, but, gradually getting accustomed to the gloom of the place, they learn to do without, and sit, therefore, literally in the dark the whole time of their confinement. It is impossible to imagine a more monotonous and dismal occupation for a child; and yet I was told the children were not unhappy, although it was generally admitted "they did fret a good deal at first." The truth is, that by blunting the sensibilities and deadening the faculties, the mind may be rendered callous to a lot which would otherwise be too bitter for human endurance. Poverty of the parents is not the cause of this immolation of infancy. The pit-men of the north of England collieries are a better paid class of operatives than any body of working men equally numerous. I found their average earnings to be 24*s.* a week; and when a colliery is not limited in the quantity of coal allowed to be raised (which by agreement among the coal-owners is sometimes done to keep up prices), a pit-man often earns 30*s.*, and even 40*s.* in a week. Besides this amount of money wages, he is allowed a cottage rent-free, or at a mere nominal rent of sixpence a fortnight, the cottage frequently containing four good rooms. He has also a bit of garden-ground rent-free, sufficient for the growth of his vegetables; and, moreover, another important advantage, for which he may well be envied by the London operatives,—as much coal as he wishes to burn the year round, free of charge. All I have observed, however, only strengthens my conviction that high wages and corresponding benefits are thrown away upon those who have received no moral culture and are incapable of self-guidance.—*From Mr. Hickson's Report.*

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's Inn Fields.

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